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Engineering Newsletter

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS

14 GREGORY HALL | MARCH, 1958 | URBANA, ILLINOIS

TV TECHNICAL TIPS (January)

—Cecil S. Bidlack

A Ford Foundation grant will permit NAEB to hold a Video Recording Workshop for technical personnel May 5 to 9, 1958 at the WTTW studios in Chicago. A sub-committee of the NAEB Engineering Committee met in Chicago on Dec. 16 to make tentative plans for the workshop and to discuss details of the program. The committee was aided in its discussion by the response to an inquiry mailed Nov. 11, 1957. This inquiry went to all NAEB ETV stations on the air, all stations under construction and to television production centers, asking for nominations of participants and for program suggestions.

The program of the Video Recording Workshop will cover primarily kinescope recording since the problems being encountered in this method of recording are immediate and timely. However, introductory technical details of video tape recording will be presented, since it is expected that within the next two years ETV stations may be in the process of conversion to videotape.

Although the date and place of the workshop have been set, many details of the arrangements are yet to be completed. Within the next month persons who have been selected will be notified and their names will be published in a future *Newsletter*.

"Kinescope Recording Made Easy" is the title of a four page paper by Richard Helder of the WTTW staff which we mailed in November to chief engineers of ETV stations and production centers. Actually this isn't a treatise on kinescope recording but is the detailed procedure for the operation of the WTTW kinescope recorder. We realized when we duplicated it that many of the items apply only to the WTTW operation, however we believed that it might be of value to others in setting up a routine for their own kinescope operation. We have additional copies for those who didn't receive it and will mail it upon request.

NAEB Engineering Newsletter

March, 1958

NAEB Engineering Newsletter, a quarterly publication issued by the National Association of Educational Broadcasters, 14 Gregory Hall, Urbana, Ill. $2 a year, edited by Cecil S. Bidlack.

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In a late mailing we also announced the availability of used image orthicon tubes type 5820 and 6474 from the National Broadcasting Company. These tubes have been mostly retired for lack of sensitivity or sticking. NBC is offering them to educational TV stations and production centers at $25.00 each. They will be shipped express collect with no guarantee of life.

If you wish to purchase some of these tubes write to:

Thomas H. Phelan, Manager
TV Maintenance and Plant Facilities
National Broadcasting Company, Inc.
RCA Bldg., Radio City
New York 20, New York

You may specify either 5820 or 6474. The latter type is used in color television and designed for operation below the knee of the characteristic as contrasted to the 5820 operation above the knee. Mr. Phelan states that individual records have been kept on these camera tubes and that NBC will make every effort to see that only serviceable tubes are shipped.

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The first Ampex production model Videotape Recorders were delivered in late November to KING-TV, Seattle and KGW-TV, Portland and were im-

mediately placed in service. Ampex has announced that it will deliver more than 100 units of the production model videotape recorder by April in time for Daylight Savings Time operation. It has also announced that a new unit to convert its monochrome recorder to color operation will be available and delivery of prototype models of this device is expected to begin in June.

On October 21, RCA demonstrated a prototype model of its color video tape recorder. NBC expects delivery of six of the new color recorders in April and will install color "tape centrals" in both its New York and Burbank studios. Prototype models of the RCA color recorders will sell for $96,000 with delivery expected to begin in September of 1958. RCA also has announced that it expects to have production models of both color and monochrome video tape recorders available for delivery in December 1958. Prices have been set at $63,000 for the color recorder and $49,500 for the monochrome version.

With the TV networks expecting to furnish programs to affiliates on a clock time basis by the use of magnetic tape recorders, the era of video tape will truly begin with the advent of Daylight Savings Time in 1958.

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It is with deep regret that we must inform you of the death of Clement E. LaFond, Chief Engineer of WKNO-TV in Memphis. He was stricken with a heart attack and died at his home on December 21. His untimely death at 43 was a shock to his family and associates.

Mr. LaFond was one of the first members of the staff of WKNO-TV and designed the stations engineering facilities. He engaged in every type of activity as well as engineering to help activate Channel 10 in Memphis. He was formerly employed as an engineer at KUHT, the pioneer ETV station at the University of Houston. He received his BA in Radio and Television at the University of Houston in 1951 and his MA there in 1953.

Mr. LaFond is survived by his wife and a daughter, Michelle.

Did you see -

Special Report on ETV	Broadcasting Nov. 11
FCC Mobile TV Monitor	Broadcasting Dec. 2
New York State Seeks Channel 13	Broadcasting Dec. 9

RCA has announced that it is developing new type fm broadcast transmitters and complementary multiplexing equipment. By late 1958, they expect to have a complete line of fm transmitters designed for multiplex operation. The line will include the following: a 10 w exciter-transmitter; a 250 w fm transmitter; a 5kw fm transmitter, and multiplex subcarrier generator equipment for use with RCA multiplex exciters.

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The FCC has authorized a TV translator station at Redwood Falls, Minn. to rebroadcast the programs of KTCA-TV St. Paul's educational TV station.

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General Electric has announced a new and smaller type of live color TV camera at the opening of its new WGY-WGRB (TV) broadcast center in Schenectady.

This new camera uses three image orthicon tubes but weighs 75 pounds less than most models. It is about ten inches shorter, three inches narrower and an inch lower than current cameras. Printed circuits and transistors have been used to cut down size. A new optical system eliminates many glass surfaces and special circuitry, it is claimed, insures truer registration of colors with no blur or run over into other colors.

A pre-production model was demonstrated, however GE expects to put the new camera into production soon. The expected price is around $50,000 competitive with other makes.

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FCC on December 18 proposed rule making under Docket No. 12274 to permit daytime stations to get longer operating hours. The Daytime Broadcasters Association has proposed operation from 5 AM or local sunrise (whichever is earlier) to 7 PM or local sunset (whichever is later) instead of present sunrise-sunset only provisions. Comments on this proposal are due March 18, reply comments 30 days later. For complete text see Federal Register, Dec. 24, 1957.

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Vorce C. McIntosh, Chief Engineer, University TV and Radio, The University of New Mexico at Albuquerque, is looking for an RCA Type TC-4 Audio-Video Switcher. If you have one for sale please contact him.

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Just before deadline, we received a communication stating that WRTI-FM, Temple University in Philadelphia, has installed a new 500 watt fm transmitter. It is the first transmitter to be manufactured

by a new firm, I.T.A., Industrial Transmitters and Antennas, 7327-A West Chester Pike, Upper Darby, Penna. Their new line of fm transmitters, designed especially for the 88-108 mc educational band, consists of 10, 75, 250 and 500 watt transmitters. The latter two transmitters have been type accepted by the FCC and the 10 and 75 watt models are now being processed for approval.

With the number of fm stations on the air growing daily, and with no more fm channels available in large population centers, educational institutions would do well to take another look at fm broadcasting. Pressure is certain to develop for the FCC to assign the unused channels for commercial use, once the available commercial assignments are occupied. For years Gates Radio Company of Quincy, Illinois has been the sole manufacturer of fm broadcast equipment. The RCA announcement of a new fm line and now the I.T.A. announcement points up the fact that fm is again on the upswing. The announcements also emphasize the need for educational interests to get busy and occupy these reserved channels while they are so easily available.

TV TECHNICAL TIPS (February)

— Cecil S. Bidlack

On Jan. 15, I had the privilege of attending a demonstration of the new RCA color video tape recorder in Camden, N. J. More than 100 broadcasters and engineers attended the afternoon demonstration including Fred Remley and Larry Griewski of the University of Michigan, Dr. W. J. Kessler of the University of Florida, Cy Braum of JCET and the writer. We saw Art Hungerford in the group attending the morning demonstration and there may have been other ETV representatives we missed seeing.

We were very much impressed by the performance of the equipment. Some observers thought the quality of the recordings as good as live pick up. Sections of the Perry Como Show of the previous Saturday, and a portion of the same day's Howard Miller Show were presented in color as well as a specimen of black and white recording. Tape dropouts were in evidence on both the monochrome and color recordings and were especially noticeable in the color recordings since they produced white noise flashes.

The RCA system is similar to Ampex in that tape width, tape speed and the tape itself are the same. RCA uses a revolving head mechanism holding four heads, although head rotational speed differs slightly from the 1440 rpm used by Ampex. At present tapes are not interchangeable between machines, however this feature will be available on production models. RCA and Ampex are discussing mutual standards so that eventually universal interchangeability will be possible. RCA equipment is entirely rack mounted while Ampex uses a console-mounted transport mechanism with part of the equipment rack mounted. The RCA equipment also incorporates an erase head while Ampex tapes must be bulk erased. RCA has an additional independent audio cue channel so that special operative instructions can be recorded along with picture information.

A price of $63,000 has been announced for the RCA color recorder and $49,500 for monochrome equipment. Production models are expected to be available toward the end of 1958 with seven prototype models to be built and put in service prior to the production run. Monochrome equipment contained in five racks, can be converted to color by the addition of one rack of color processing equipment. The equipment requires 6 kw of 60 cycle single-phase power for operation.

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Ampex, too, is making an accessory kit to convert its monochrome video tape recorder to color. It consists of an additional rack of equipment costing $29,000 for the prototype units. The first of these has been promised for June delivery to WGN-TV, Chicago. A substantial reduction in price is expected once this equipment is on a production basis.

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Damage estimated at $75,000 was caused by a fire Jan. 9 in Swain Hall, which housed the studios of WUNC-TV and WUNC-FM in Chapel Hill, N. C. It is believed that the fire was the work of an arsonist as seven fires occurred on the campus that day. Spun glass used in the sound treatment of the studio area prevented the fire from spreading, thus saving the building from complete destruction.

The radio area suffered only smoke and water damage. It is expected that the radio studio will be ready for occupancy before Feb. 1. Much video equipment was saved. TV programming was moved temporarily to the Raleigh studios. However, on Jan. 20 some programming was resumed from Chapel Hill by using the remote bus as a studio. It is expected that it will take at least six weeks before the damaged studios and offices are ready for occupancy.

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General Electric has announced that 50 TV stations are now equipped with "I-O guards" the wobbulating device designed to improve the useful service obtained from image orthicon camera tubes. Among the ETV stations which are using this equipment are

WTTW, Chicago; and WBIQ, Birmingham, Ala.

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Did you know . . .

. . . that the Lincoln Division of the Ford Motor Co. has made a FM tuner available as optional equipment in its 1958 Lincoln and Continental automobiles? The tuner is manufactured by Bendix Radio and feeds audio through the AM set since volume and tone controls operate either receiver.

. . . that as of Jan. 1 there were 537 commercial and 140 non-commercial FM stations operating? This is a gain of 7 commercial and 15 non-commercial stations over the past year.

. . . that both radio and television signals have been transmitted over long distances by bouncing them off meteor trails?

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Three meetings of interest to engineers in the radio and television broadcasting industry which will be held during March and April are listed below for your information:

March 24-27 Institute of Radio Engineers, National Convention and Radio Engineering Show, New York City, Waldorf-Astoria Hotel and New York Coliseum.

April 21-26 Society of Motion Picture and Television Engineers, 83rd Semi-Annual Convention, Los Angeles, Calif., Ambassador Hotel.

April 28-*May* 1 NAB 12th Annual Broadcasting Engineering Conference, Los Angeles, Calif. Statler Hotel, concurrent with 36th Annual NAB Convention at the Ambassador Hotel.

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Planning a radio station? RCA has available a brochure, including floor plans, equipment requirements and current trends. The material contained in this brochure has been appearing serially in RCA Broadcast News beginning with the October, 1957 issue. The brochure contains the complete series and may be obtained by writing RCA, Broadcast and Television Equipment Departments, Camden 2, N. J.

TV TECHNICAL TIPS (March)

—Cecil S. Bidlack

In early February, one of the most recent technical developments was demonstrated to newsmen by the Blonder-Tongue Labs, of Newark, N. J. It was Bi-Tran, a system of TV broadcasting which allows two programs to be broadcast over the same television channel. This is a "compatible" system which may be applied to double the number of programs received on a single channel.

As the system would work, each channel would be divided into an "A" and a "B" portion. The "A" portion would contain present commercial or educational programming as now provided. The "B" portion would be used for special services not now accorded television time and would be received only if the viewer elected to decode the signal at his receiver.

At the demonstration, the regular broadcast program (program "A") was seen on the receiver screen. When the decoder was switched on, program "B", a closed circuit picture, appeared on the screen. Those present at the demonstration commented that the multiplexed program was inferior in resolution and contrast to the regular program. However Blonder-Tongue officials stated that the demonstration was primarily to show the feasibility of the system and that the system required refinement to improve picture quality on the the multiplexed channel.

It was stated that it would cost approximately $5,000 to modify transmitting equipment for Bi-Tran and about $60 for a decoder for the home receiver. Further demonstrations will be held for radio and television broadcasters as well as industry and military leaders, educators, medical and governmental specialists.

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Two papers of interest to technical personnel at NAEB stations and production centers will be in the mail soon. The first, "Film in Television" by Rodger J. Ross of the Canadian Broadcasting Corporation is a discussion of the technical quality of television film from the standpoint of the television broadcaster. The second is a "how-to-do-it" paper by Mel' Haas of the WOI staff. It details their method of balancing crowd noise at sports broadcasts automatically when the announcer uses his mike cut-off or "cough" button. It's called "Automatic Crowd vs. Announcer Balance."

These papers will be mailed to chief radio and television engineers on our *Technical Directory* list. We have extra copies available to send upon request to others wishing them.

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WTTW has expanded its kinescope recording service for outside agencies by the installation of a second kinescope recorder, according to Duane Weise, chief engineer of the Channel 11 Chicago ETV station. They are equipped to record either off-the-air from Chicago stations or by direct line from their own

or remote studios.

The station has also issued a new brochure covering the WTTW-TV Recording Service which includes sample video recording costs. Revenue from the recording service is applied to the operation of WTTW.

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A new line of closed circuit vidicon television equipment has just been announced by the General Precision Laboratory, Inc., Pleasantville, N. Y. The model PD-250 camera incorporates a five-inch electronic viewfinder, a four-lens turret and either portable or rack-mounted control equipment. For studio installations a control console is available, equipped with a 14-inch picture monitor, a five-inch waveform monitor and rack mounted control unit with remote control panel. The PD-250 camera is priced at $1,750 and operates from an external RETMA sync or an internal sync generator. Where budget requirements are restrictive, the model PD-250 camera priced at $1,250 is self contained and provides either video or RF output. It is equipped with a three lens turret as standard equipment but has no viewfinder.

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Glen Southworth, chief engineer of KWSC, the State College of Washington at Pullman, is the author of an article on page 100 of the February 14 *electronics*. The article outlines a method of determining optimum electronic focus of television cameras and film chains by a special bar chart and by adjusting focus controls for maximum response of peaks on the waveform monitor. This chart, developed by Mr. Southworth, also permits rapid determination of the system resolution and relative resolving power of different camera lenses.

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February 1958 *Electronic Industries* contains a report on progress achieved by the EIA Committee, Microwave Relay Systems for Communication (TR-14) on "Standardizing Microwave Communication Systems." Due to the many and varied uses of microwave systems, it has been found necessary to standardize the various units and to arrive at a glossary of terms to best describe the microwave communication process. By reference to these standards it may be possible for buyers to simplify the specification of complete systems. The article was written by Trevor Clarke, former chairman of the above committee.

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WRFK-FM at the Union Theological Seminary, Richmond 27, Va. is increasing power to one kilowatt. They wish to purchase used frequency and modulation monitors for this transmitter. If any of our readers have these available please contact Mr. R. W. Kirkpatrick at WRFK-FM.

WHRM, Wausau, of the Wisconsin State Broadcasting Service, is installing a new RCA 8-bay FM antenna on a new 600-foot tower being erected by WSAU-TV. The FM antenna is a gift to the state of Wisconsin Valley Television, Inc. and is being installed at about the 500-foot level on the tower. The added antenna height is expected to extend the WHRM secondary coverage by 15 miles and add perhaps 25 per cent to the area served with a satisfactory FM signal, acording to Jack Stiehl, chief engineer of the Wisconsin State Broadcasting Service. It is also expected that shadow areas or dead spots within the present coverage contours will be eliminated.

ETV STATIONS ON THE AIR

KCTS	Seattle, Wash.	9
KETA	Okla. City, Okla.	13
KETC	St. Louis, Mo.	9
KLSE	Monroe, La.	13
KOAC-TV	Corvallis, Ore.	7
KQED	San Francisco, Calif.	9
KRMA-TV	Denver, Colo.	6
KTCA-TV	St. Paul, Minn.	2
KUED	Salt Lake City, Utah	7
KUHT	Houston, Tex.	8
KUON-TV	Lincoln, Neb.	12
WAIQ	Andalusia, Ala.	2
WBIQ	Birmingham, Ala.	10
WCET	Cincinnati, Ohio	48
WETV	Atlanta, Ga.	30
WGBH-TV	Boston, Mass.	2
WHA-TV	Madison, Wis.	21
WHYY-TV	Philadelphia, Pa.	35
WILL-TV	Urbana, Ill.	12
WIPR-TV	San Juan, P. R.	6
WKAR-TV	East Lansing, Mich.	60
WKNO-TV	Memphis, Tenn.	10
WMVS-TV	Milwaukee, Wis.	10
WOSU-TV	Columbus, Ohio	34
WQED	Pittsburgh, Pa.	13
WTHS-TV	Miami, Fla.	2
WTIQ	Munford, Ala.	7
WTTW	Chicago, Ill.	11
WTVS	Detroit, Mich.	56
WUNC-TV	Chapel Hill, N. C.	4
WYES-TV	New Orleans, La.	8

IDEA EXCHANGE

Ed Note: Efforts to start a regular "Idea Exchange" column in the Newsletter have, up to this point, failed to yield the desired response. In the hope that interest in such column will eventually increase, and in the firm belief that such a column could be of great value to many members, we once again ask for your participation. The proposed column, however, can only be as regular as your contributions.

—N A E B—

NETWORK NEWS

—Bob Underwood

As an additional service to network members, we are considering serving as an ordering agent for any stations wishing to obtain either mailing cases, tape boxes or tapes.

Anyone interested in purchasing such materials through the network is invited to contact us for further details. There is no obligation to buy simply because you inquire.

The mailing cases, which we have made to order, may be obtained for approximately $2 each. The tape boxes run about 10c each, and the tapes about $2 each. Of course, we would not be able to quote final prices until we had some indication of the quantity needed for each item.

If you are interested in this idea, please contact me stating your interest in either mailing cases, tape boxes, tapes or all or any combination of the three. We will be pleased to take it from there. I look forward to hearing from you.

Please do not forget the tape returns.

WQED GETS $250,000 WESTINGHOUSE GIFT

A gift of a 500-foot transmitter tower, adjoining land and buildings was made by Westinghouse Electric Co. to WQED, Pittsburgh's educational TV station. The property, valued at $250,000, has been used by WQED since the station went on the air April 1, 1954. Gwilym Price, president of Westinghouse Electric Co., presented the deed to John Rayan, president of WQED, during a luncheon.

Donald McGannon, president of Westinghouse Broadcasting Co., predicted at the luncheon that educational TV stations will become an indispensable part of the United States educational system.

More than three years of WQED operation in Pittsburgh, McGannon said, is proof that educational TV need not be dull. He said educational TV "supplies pure research for commercial television in development of varied forms and techniques before they are brought into commercial television."

Commissioner Robert Lee of the FCC told the group that his own original concern about the feasibility of educational TV has been erased by the success of many stations and that he is now its ardent supporter.

WQED, now broadcasts 90 hours of programs per week and reaches directly a total of 350 classrooms in Pittsburgh area schools.

1958 NAEB CONVENTION

The NAEB's national convention will be held at the Sheraton-Fontenelle Hotel in Omaha, Neb., from Tuesday, Oct. 14 through noon Friday, Oct. 17.

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at the Wisconsin Historical Society as part of
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